



STPS10L25D/G

LOW DROP POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	10 A
V_{RRM}	25 V
T_j (max)	150 °C
V_F (max)	0.35 V

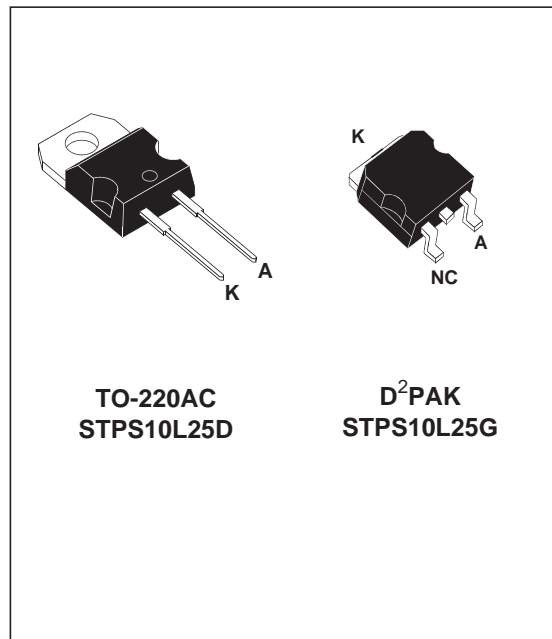
FEATURES AND BENEFITS

- VERY LOW FORWARD VOLTAGE DROP FOR LESS POWER DISSIPATION
- OPTIMIZED CONDUCTION / REVERSE LOSSES TRADE-OFF WHICH MEANS THE HIGHEST EFFICIENCY IN THE APPLICATIONS
- AVALANCHE CAPABILITY SPECIFIED

DESCRIPTION

Single Schottky rectifier suited to Switched Mode Power Supplies and high frequency DC to DC converters.

This device is especially intended for use as a rectifier at the secondary of 3.3V SMPS units.



TO-220AC
STPS10L25D

D²PAK
STPS10L25G

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter	Value	Unit
V_{RRM}	Repetitive peak reverse voltage	25	V
$I_{F(RMS)}$	RMS forward current	30	A
$I_{F(AV)}$	Average forward current	$T_c = 140^\circ\text{C} \quad \delta = 0.5$	A
I_{FSM}	Surge non repetitive forward current	$t_p = 10 \text{ ms Sinusoidal}$	A
I_{RRM}	Repetitive peak reverse current	$t_p = 2 \mu\text{s square } F = 1\text{kHz}$	A
I_{RSM}	Non repetitive peak reverse current	$t_p = 100 \mu\text{s square}$	A
P_{ARM}	Repetitive peak avalanche power	$t_p = 1 \mu\text{s} \quad T_j = 25^\circ\text{C}$	W
T_{stg}	Storage temperature range	- 65 to + 150	°C
T_j	Maximum operating junction temperature *	150	°C
dV/dt	Critical rate of rise of reverse voltage	10000	V/ μs

* : $\frac{dP_{tot}}{dT_j} < \frac{1}{R_{th}(j-a)}$ thermal runaway condition for a diode on its own heatsink

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THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case	1.5	$^{\circ}\text{C}/\text{W}$

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Tests Conditions	Tests Conditions	Min.	Typ.	Max.	Unit
I_R^*	Reverse leakage current	$T_j = 25^{\circ}\text{C}$	$V_R = V_{RRM}$		800	μA
		$T_j = 125^{\circ}\text{C}$		135	260	mA
V_F^*	Forward voltage drop	$T_j = 25^{\circ}\text{C}$	$I_F = 10\text{ A}$		0.46	V
		$T_j = 125^{\circ}\text{C}$	$I_F = 10\text{ A}$	0.30	0.35	
		$T_j = 25^{\circ}\text{C}$	$I_F = 20\text{ A}$		0.55	
		$T_j = 125^{\circ}\text{C}$	$I_F = 20\text{ A}$	0.41	0.48	

Pulse test: * $t_p = 380\ \mu\text{s}$, $\delta < 2\%$

To evaluate the maximum conduction losses use the following equation :

$$P = 0.22 \times I_{F(AV)} + 0.013 I_{F(RMS)}^2$$

Fig. 1: Average forward power dissipation versus average forward current.

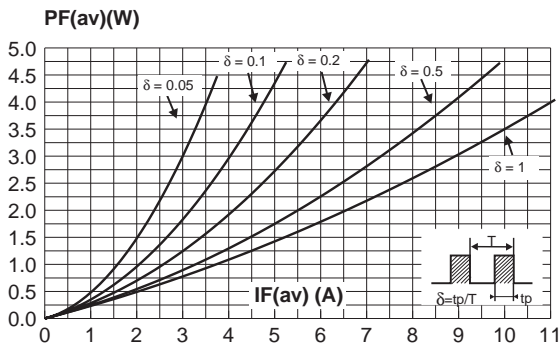


Fig. 3: Normalized avalanche power derating versus pulse duration.

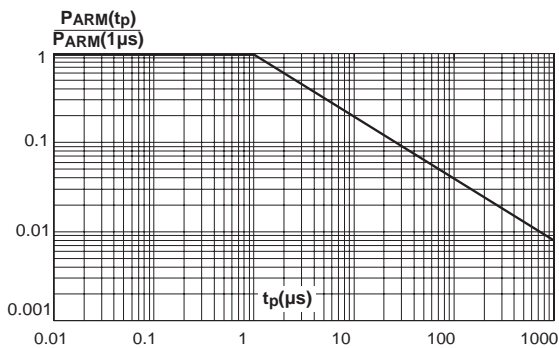


Fig. 2: Average forward current versus ambient temperature ($\delta = 0.5$).

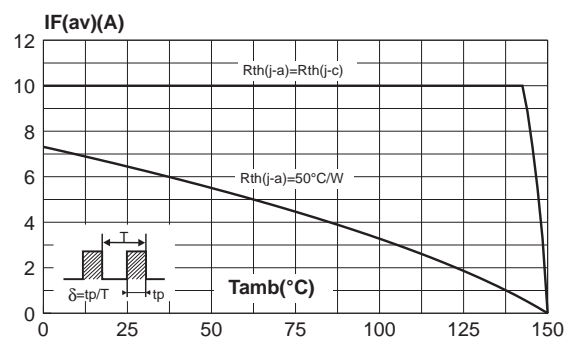


Fig. 4: Normalized avalanche power derating versus junction temperature.

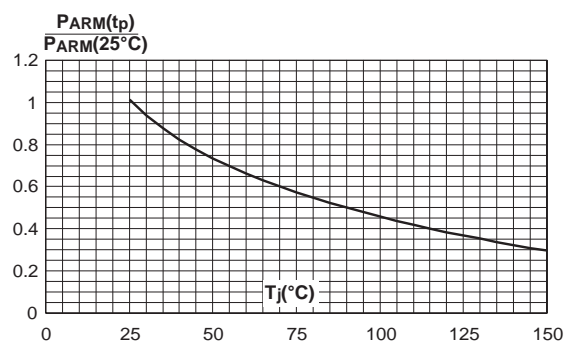


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values).

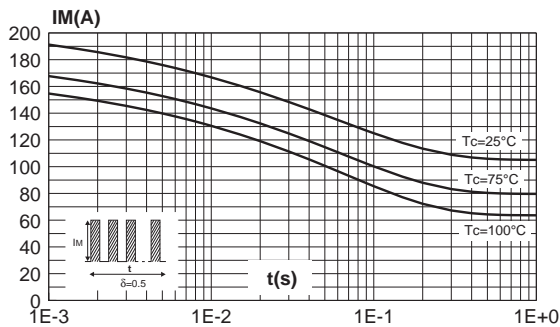


Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration.

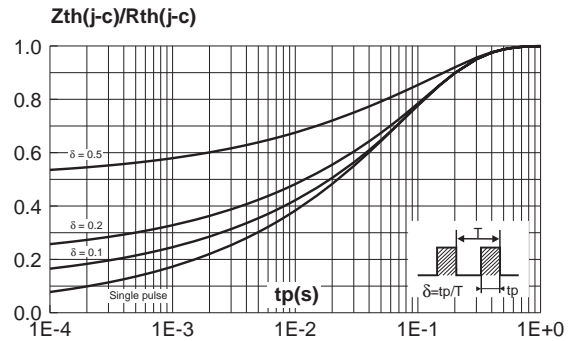


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values).

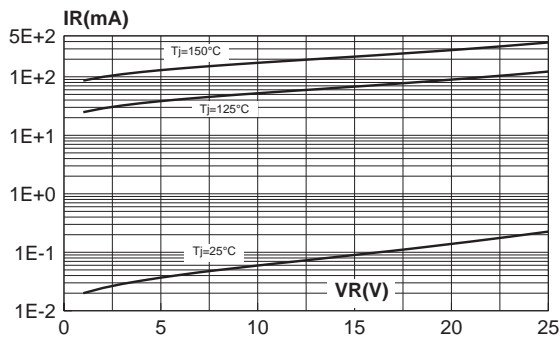


Fig. 8: Junction capacitance versus reverse voltage applied (typical values).

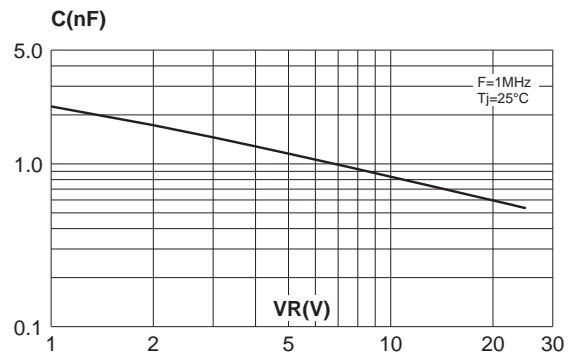


Fig. 9: Forward voltage drop versus forward current (maximum values).

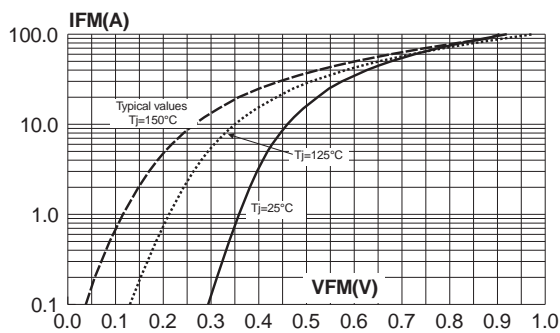
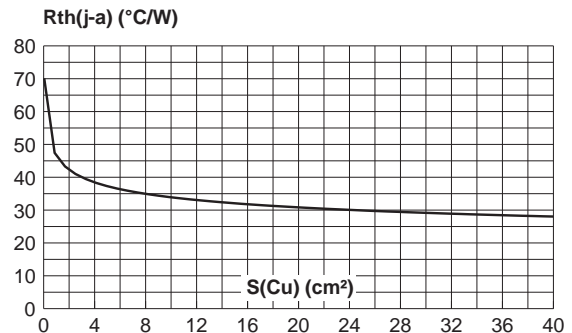
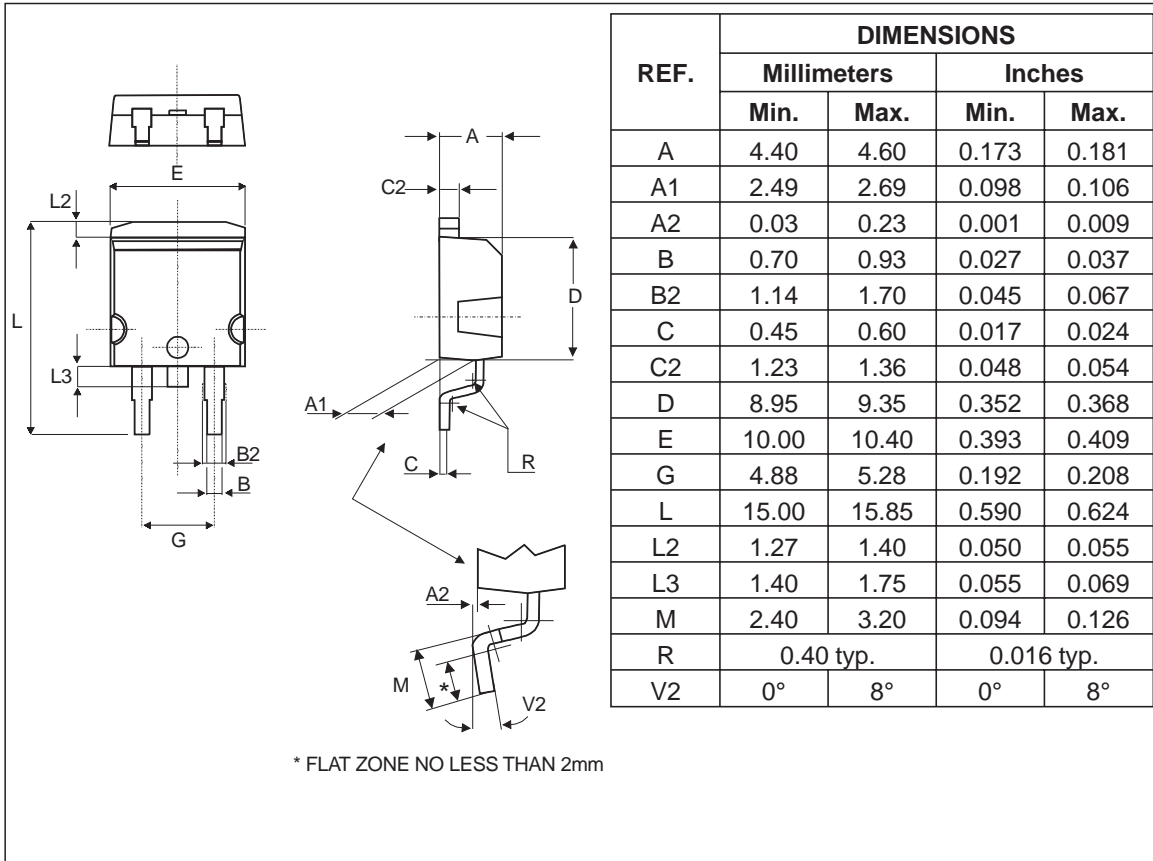


Fig. 10: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness : 35 μm). (STPS10L25G only)

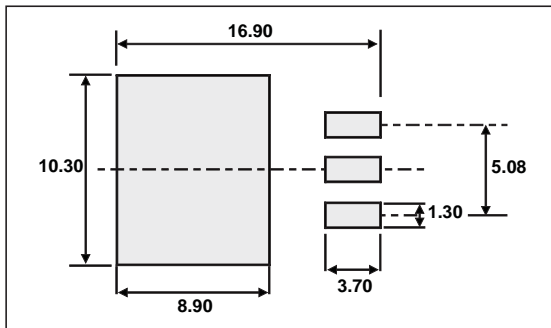


STPS10L25D/G

PACKAGE MECHANICAL DATA D²PAK

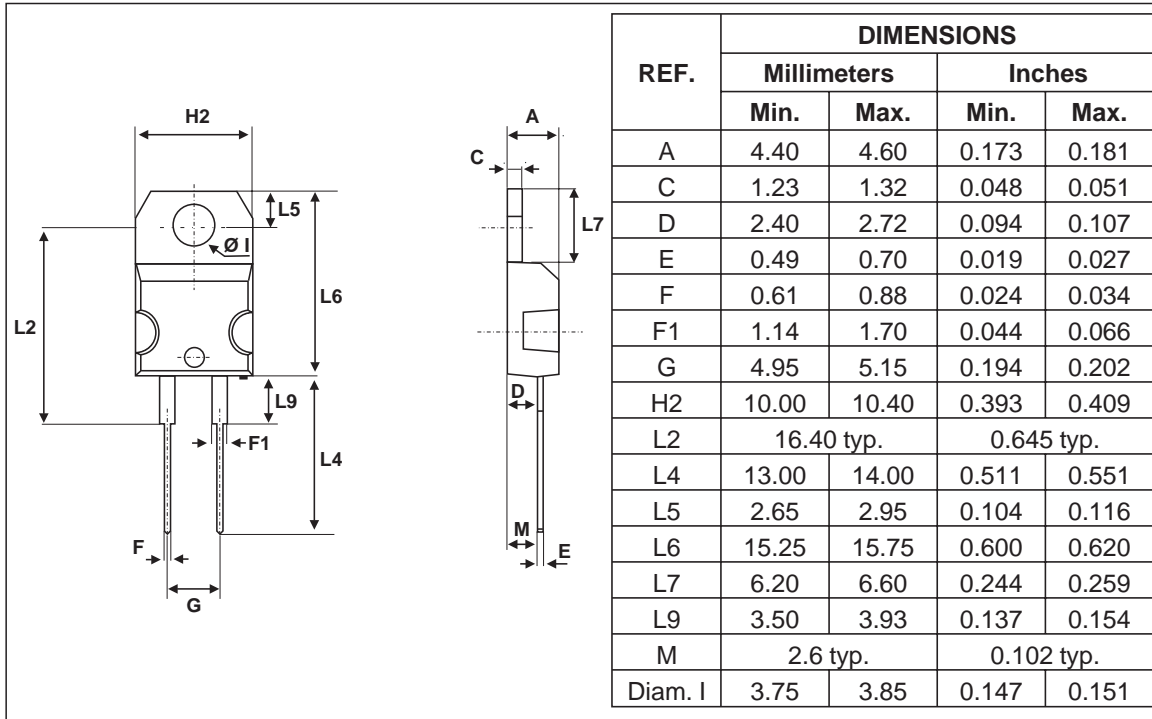


FOOT PRINT DIMENSIONS (in millimeters)



- Cooling method: by conduction (method C)

PACKAGE MECHANICAL DATA
TO-220AC



- Cooling method : C
- Recommended torque value : 0.55 m.N
- Maximum torque value : 0.70 m.N

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS10L25D	STPS10L25D	TO-220AC	1.86g	50	Tube
STPS10L25G	STPS10L25G	D ² PAK	1.48g	50	Tube
STPS10L25G-TR	STPS10L25G	D ² PAK	1.48g	1000	Tape & reel

- Epoxy meets UL94,V0

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